Attachment 9

Stormwater Flood Management Grant Proposal
Lower Silver Creek, Reaches 4-6
Water Quality and Other Expected Benefits

Attachment 9 consists of the following items:

Water Quality and Other Expected Benefits. Attachment 9 provides estimates for the water quality and other expected benefits of the proposed project.

Appendix 9A. Appendix 9-1 of this attachment contains specific information regarding the qualitative and quantitative water quality, habitat restoration, and other benefits anticipated for the Project.

Introduction

This attachment includes information regarding the Project's other benefits that extend beyond the flood damage reduction costs expected as described in Attachment 7 following implementation. The section contains a narrative description of the expected water quality, habitat restoration, and other benefits of the Project. Where possible, each benefit was quantified to the extent feasible. In cases where quantitative analysis was not feasible, this attachment provides complimentary qualitative analyses. Appendix 9-1 contains detailed information regarding the benefits anticipated to occur as a result of this proposal.

Other Benefits

The water quality and other benefits that are anticipated to result from implementation of this project are summarized in Table 9-1, and the cost-benefit overview is summarized in Table 9-2. Detailed cost and benefit information associated with the project, including present value calculations, is provided in Attachment 7 under Appendix 7A-1 through 7A-5.

Table 9-1: Benefits Summary

Type of Benefit	Assessment Level	Beneficiaries
Water Quality and Other Benefits		
Reduced channel erosion and sedimentation to SF Bay	Monetized	Local and Regional
Improved fish passage from SF Bay	Qualitative	Local and Regional
Increased acreages of emergent wetland and shaded aquatic riparian habitat	Qualitative	Local and Regional
Avoided Debris Cleanup	Monetized	Local
Avoided Public Safety Expenses	Monetized	Local
Reduced discharges of trash to SF Bay [listed 303(d) list]	Qualitative	Local and Regional
Benefits target disadvantaged communities	Qualitative	Local and Regional
New trail connectivity to local and regional parks and schools	Qualitative	Local and Regional

Table 9-2: Benefits-Cost Analysis Overview

	Present Value ($2009)
Costs – Total Capital and O&M	$54,992,397
Monetizable Benefits	
Damage to Structures	$2,910,000
Avoided Debris Cleanup (Overbank deposition)	$25,000
Avoided Public Safety Expenses	$31,500
Vehicle Damage and Transit Disruption	$573,750
Qualitative Benefits	**Qualitative Indicator***
Improved fish passage to and from SF Bay	+
Increased emergent wetland and shaded aquatic riparian habitat	+
Reduced discharges of trash to SF Bay [listed 303(d) list]	++
Benefits target disadvantaged communities	+
New trail connectivity to local and regional parks and schools	+

*Magnitude of effect on net benefits
+/- (negligible or unknown); + (moderate positive); ++ (significant positive): - (moderate negative); -- (significant negative)

The "Without Project" Baseline

If the Project were not implemented, there would continue to be continued sediment loading and the benefits targeted for local disadvantaged communities would not be realized. Additionally, there would be no benefit received from avoided flood damages.

Water Quality and Other Benefits

The project would provide multiple water quality, habitat restoration, and other expected benefits. These benefits are described in detail below and are summarized in Table 9-1.

Reduced Overbank Deposition of Sediment

Lower Silver Creek drains into Coyote Creek, which subsequently drains to South San Francisco Bay. The Project is expected to result in reduced the sediment loading to Coyote Creek, which ultimately discharges into the South San Francisco Bay, by including a sediment transport channel sized to mobilize and transport sediment at an ecologically relevant frequency. This will include an effective in-channel floodplain to dissipate high flow energy and facilitate the natural formation of an appropriately sized base flow channel. The sediment transport channel will be designed so that sediment mobilized during flow events with return intervals that occur frequently enough to maintain habitat diversity and complexity. These features combined with bank improvements, including floodwalls and vegetated riprap or gablions, would significantly reduce existing in-channel bank erosion, overbank deposition, and provide sediment storage capacity within the channel, which then will be colonized by wetland and riparian vegetation to further promote stability. Damage reduction benefits for overbank deposition were estimated at $25,000 (Supplemental Watershed Plan, 2001 – see Table 5 in Appendix 9A-1).

Avoided Debris Cleanup

The flooding associated with chronic and persistent flooding results in public response every two years (Supplemental Watershed Plan, 2001 – see Table 5 in Appendix 9A-1). As a result, public works crews must respond within the City of San Jose to these events. Based on wage data for public works employees, the crew size necessary to respond to the affected area, and the equipment necessary to aid in the response, an estimated $31,250 ($2009) is spent on debris cleanup per storm event. The net present value of this avoided cost after project completion is $5,000.

Avoided Public Safety Expenses

The flooding associated with chronic and persistent flooding results in public response , on average, every two to three years (Supplemental Watershed Plan, 2001 – see Table 5 in Appendix 9A-1). As a result, public safety employees must respond within the City of San Jose. Based on wage data for public employees, an estimated $37,500 ($2009) is spent on debris cleanup per storm event. The net present value of this avoided cost after project completion is $12.500.

Improved Fish Passage to and from San Francisco Bay

Component 1 of the Project would include channel features that are anticipated provide improved passage and habitat conditions for fish, including steelhead. Component 1 includes an earthen channel bottom that would allow for meandering with the base-flow channel and the formation of pools. The increased riparian habitat proposed in conjunction with Component 1 would provide additional shade to the creek, which could in turn facilitate cooler the water temperatures. Increased vegetation and the attraction of other animals and insects would likely provided increased food sources. Additionally, a raised maintenance road would remove an obstruction in the channel bottom that prevents the base flow channel from meandering using natural processes.

Increased Emergent Wetland and Riparian Habitat

Component 1 of the Project is conditioned to restore and enhance areas of Lower Silver Creek that are impacted by Project construction (see MMP in Appendix 9A-2). The Mitigation and Monitoring Plan (MMP) for the Project requires compensation for Project-related impacts to all of Reaches 1-6 by restoration or creation of the following habitats:

- Creation of 12 acres of emergent wetlands within the sediment transport channel;
- Creation of 7 acres of upland habitat;
- Re-vegetating channel inverts and slopes with native species:
- Creation of 5 acres of riparian habitat.

Jurisdiction habitats will be targeted to the sediment transport channel with native wetland species expected to naturally colonize these portions of the channel. Riparian habitats would be planted in the between the top right bank and the toe of the slope to form a complex vegetation structure comprised of over-story, mid-story, and understory canopies, where possible. Limited irrigation is expected to increase the chances of success and may be required over the long-term at some locations.

Reduced Discharges of Trash and Sediment to San Francisco Bay

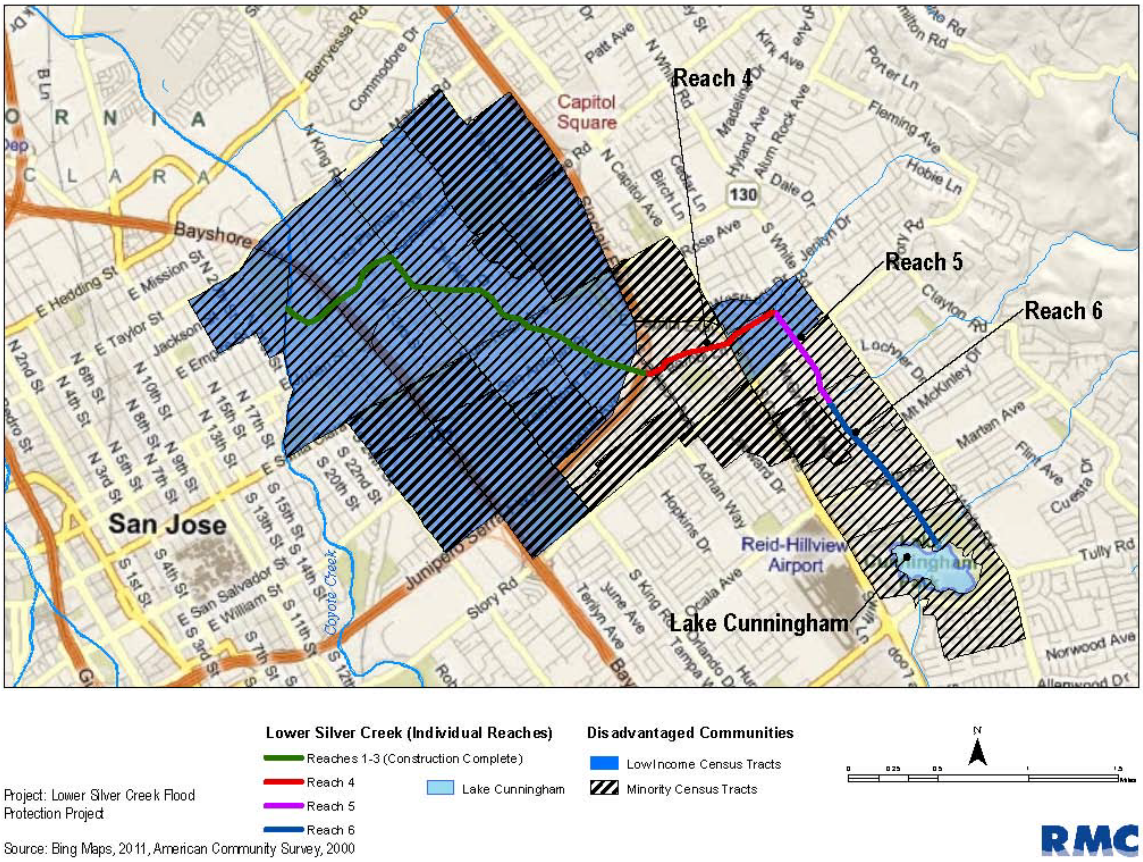
One of the intents of the Project design is to minimize the required maintenance associated with “low flow” channel of Lower Silver Creek following Project completion. However, Lower Silver Creek will still drain a heavily urbanized watershed after the Project and could still be subject to urban trash dumping and potentially large amounts of material from landslides in the upper watershed; similar to existing conditions. The improved maintenance access offered by the Project combined with the trapping effect of the proposed channel vegetation is expected to enhance the District’s maintenance activities, especially in terms of trash removal and associated vegetation management.

Additionally, the channel improvements proposed as part of Component 1 of the Project are expected to contribute to a reduction is sediment loading to Coyote Creek and South San Francisco Bay. This reduction is sediment load is estimated at 14,920 cubic yards per year (see Table H, Appendix 7A-2).

Benefits Target Disadvantaged Communities

The Project’s benefits, including flood protection from the 100-year storm event, would be targeted at several disadvantaged communities that border the Project. As depicted in Figure 9-1,, these include both low-income and minority census tracts based on 2000 Census Data. Appendix 9A-3 provides additional details for each census tract illustrated in Figure 39-1 and includes information on race/ethnicity and median household incomes.

Figure 9-1. Disadvantaged Communities



New Trail Connectivity to Local and Regional Parks and Schools

The Project will include maintenance road above the channel invert rather than in the bottom of the channel, thereby providing approximately 6,700 feet of a continuous elevated maintenance road along the Lower Silver Creek. This Project feature affords an opportunity for the City of San Jose in the future to construct trails on this road adjacent to the creek and provide better access for the District's maintenance vehicles. Actual trail construction would be the responsibility of the City of San Jose, and further environmental documentation covering trail construction would be prepared by the City of San Jose, as necessary. Not only would the maintenance road facilitate improved access, this Project feature would enhance the connectivity between other local amenities, including Plata Arroyo Park and Mayfield Park, and Mathson Middle School, Ocala Middle School, and Rogers elementary School.

The "Without Project" Baseline

If the Project were not implemented, the District would be unable to realize the numerous flood control and water quality benefits described in this attachment. Without the Project, flooding within the Project vicinity would continue at relatively frequent intervals and continue to present safety hazards for local residents and business. Without the completion of the Letter of Map Revision (LOMR) process, local property owners would continue to pay higher flood insurance premiums. Ecosystem benefits attributable to the Project would also not be realized, including the improved aesthetics offered by the restored habitats. Further, local disadvantaged communities would likely continue to bear a disproportionate flood impacts when compared to other portions of the Lower Silver Creek watershed.

Potential Adverse Effects from the Project

Potential adverse effects from this Project would occur during construction and will be mitigated through compliance with the Project's MMRP and MMP. No long-term, significant and unavoidable adverse effects are expected to result following construction of the Project.